

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

- Utility Patent Specification -

Inventor:

Michael SWEETSER

Invention:

**MULTI-POINT, CONCURRENT,
VIDEO DISPLAY SYSTEM USING
RELATIVELY INEXPENSIVE,
CLOSED VEHICLES**

Prepared by:

National Law Offices of **PUGH/ASSOCIATES**,
Patent & TradeMark Attorneys
C. Emmett Pugh (Reg. 22,826)
82 N. Main Street
Suffield, CT 06078-2102

(Telephone: +1.860.668.2433)
(FAX: +1.860.668.7978)
(InterNet: *epugh@PATENTLAW.com*)

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Description

Multi-Point, Concurrent, Video Display System Using Relatively Inexpensive, Closed Vehicles

5 Technical Field

The present invention relates to a video display, system in which video display screens on the sides of a mobile, wheeled vehicle are used to display changeable video signals for viewing outside of the vehicle, in which the signals can be computer generated within the vehicle or received by hard-wired or wireless or satellite signals emanating, for example, from the "Internet," that is the global, world-wide information network. The mobile, wheeled vehicle used preferably is one in which a standard, relatively small bed, relatively inexpensive, readily available vehicle (*e.g.*, an un-motorized, closed body trailer, a motorized, closed van, or a closed body truck, *etc.*) is used with only relatively minor modifications made to it (*e.g.*, a limited size, rectangular cut-out in each side wall and/or rear wall) to accommodate a rear projection TV or video display panel on each side). Additionally, other aspects of the invention relate to a multi-point, concurrent video display system, *e.g.*, for advertising, in which multiple ones of the mobile, video display vehicles are positioned at geographically spaced locations, for, for example, simultaneously or

concurrently displaying the same video signals in a co-ordinated manner, or for concurrently displaying different video signals, as may be desired.

Background Art

It is known broadly to use mobile vehicles to display, for example, advertising

5 material or other information.

The following table lists several patents which may be of general background interest to the present invention.

<u>Patent No.</u>	<u>Patentee(s)</u>	<u>Date</u>
4,110,792	Long <i>et al</i>	1978/08/29
4,495,719	Futatsuishi <i>et al</i>	1985/01/29
4,701,627	Gambuit <i>et al</i>	1987/19/20
4,782,615	Futatsuishi <i>et al</i>	1988/11/08
5,005,893	McCray	1991/04/09
5,083,826	McCray	1992/01/28
5,263,756	Gaspar	1993/11/23
5,415,451	Stanton	1995/05/16
5,507,109	Rinzler	1996/04/16
5,918,924	Cowan	1999/07/06

For example, it is known broadly to display advertising or other types of signs

20 or displays on the sides of various, wheeled vehicles; note the '719, '615, '893, '826, '756, '451, '109 and '924 patents, while the '792 patent displays a video signal on a very large screen raised up above its wheeled vehicle for wider viewing at the location of the video signal's origination, and the '627 patent uses an internally

located, projection TV video screen directed rearwardly to be viewed through its van's open rear doors.

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With respect to the mobile, wheeled vehicle used in the preferred embodiment of the present invention, the '627 patent and the '756 patents are possibly the more pertinent.

The Gambuti *et al* '627 patent is directed to a "mobile display apparatus" (a closed van) in which a projection TV set is located completely inside the van with its single, video display screen positioned to display its images to the rear through the rear doors of the van when the doors are open. This approach greatly limits the viewing scope or coverage of the display, limiting the viewing audience only to those in the rear in a relatively narrow field of view and cannot be used practically for display while the vehicle is in motion.

Also, the need to open up the doors for display operation exposes the interior of the van to the ambient during display operations, a distinct disadvantage when in inclement weather, such as cold, windy weather or rain or snow, *etc.* This "open door" arrangement likewise raises security issues, requiring a watchful operator to be ever present and vigilant to unauthorized personnel gaining access to the van's interior where, for example, all of the expensive, highly desirable, electronic equipment is located. To gain access, apparently one merely needs to go through the

open doors and remove some black canvas sheeting (400 of Fig. 9, col. 3, lines 45-57) to gain access to all of the electronic equipment.

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In contrast, the present invention in its preferred embodiment preferably uses a closed body vehicle with side wall cut-outs sized to match the TV or video display screen, with no significant, if any, gaps between the side screens and the remaining vehicle walls, providing reasonable security, even allowing an operator to position the vehicle, start-up the equipment to display the desired video signal, and even leave the vehicle for, for example, a lunch break or the like, with the standard vehicle doors locked, thereby still maintaining reasonable security from theft. Also, in the present invention, with operation allowed with all doors closed, adverse weather conditions that might damage the electronic equipment in the '627 patent or make discomfort for the operator in the '627 patent is not a significant factor in the present invention.

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The Gaspar '756 patent is directed to a closed body "advertising vehicle" in which racks of multiple TVs (*e.g.*, sixteen TVs in each side wall rack) are located in the side wall areas of the vehicle. This approach, involving in the exemplary embodiment a total of thirty-two! TV sets, generates a very large amount of heat, requiring the use of a relatively expensive, high energy usage, separate air conditioner (7 of Fig. 2). Additionally, the large TV racks takes up almost all of the previously existing wall areas, estimated to be over eighty (80%) percent of the total side wall area, raising problems of structural integrity in the vehicle body requiring substantial

restructuring of the body's walls and roof, and leaving no room for a side door or additional areas for signage or the like.

Again this is significantly different from the preferred approach of the vehicle aspects of the present invention.

5 Additionally, with respect to all of the foregoing patents, in the preferred embodiment of the present invention, the advertising or video display aspects include a multiple-point arrangement in which multiple, mobile, video display vehicles are geographically dispersed (typically miles away from at least some), each using, for example, a satellite feed or wireless-feed, "internet" signal to, for example, concurrently display the same video signals at each geographically spaced location preferably in coordination with each other.

With respect to the McCray '893 & '826 patents, the McCray approach is directed to the use of a long bed trailer having an unusually configured, indicia display superstructure of some complexity mounted on the bed of the trailer, in which the side walls of the superstructure are each canted inwardly toward the cab and canted inwardly toward their tops, forming trapezoidal configurations at their combined top and front and rear. External lights are used to illuminate the **non-video** indicia displays that take up the full sides of the superstructure and require a change out of panels to change the indicia display. The McCray approach appears to be primarily designed to be viewed by people located in front of and to the sides of the

trailer as the driver is driving down the road. This approach is in contrast to the preferred, relatively inexpensive, relatively short, enclosed body vehicle of the present invention, which generally or substantially has a rectangular or box-like configuration to its closed body as used in “off-the-shelf,” standard vehicles, in which 5 there are side video displays which still leave a substantial portion of the side walls of the vehicle in place and are often, if not more often, used for static (*i.e.*, vehicle is parked) display of the preferably constantly and instantly changeable, video signals.

With respect to the Long *et al* '792 patent, it is directed to a “mobile information display system” which is transported to the site of a sports or entertainment event and then erected way above the vehicle to provide a large screen display of video images produced by a live TV camera so that even those members of the audience who are unable to obtain a full view of the actual activity may see the field action as well as instant replays on the erected vehicle screen. This again is a very expensive, highly customized type vehicle requiring a complex, expensive erection subsystem located on the bed of a long bed trailer (note, *e.g.*, Figs. 2-4). The difficulty of movement and placement of the large, McCray vehicle and its great expense and possible need for multiple operators, make it, not only very different from the basically “off-the-shelf,” relatively inexpensive, closed body vehicle of the present invention whose body only needs to have limited, rectangular sections cut out

from each side wall, the McCray vehicle also is not practical in the multi-point advertising aspects of the present invention.

General Summary Discussion of Invention

Thus, the present invention in its preferred, vehicle embodiment aspects is directed to a relatively short body [for example, less than about twelve (12') feet in body length], mobile, enclosed body vehicle with a box-like body preferably of a standard, readily available type having preferably a discrete video display on at least one side of its enclosed body and preferably physically separate video displays on both sides, if not also to the rear of the vehicle body and possibly the front, if so desired, in which the vehicle is relatively inexpensive [only about thirty-five thousand (\$35,000.00) dollars or less]. Preferably the fully digital, video signal to be displayed originates from, for example, the "Internet" or one or more land-based server(s) and is digitally supplied to the vehicle via, for example, preferably a two-way satellite hook-up, or, alternatively, via at least in part a hard-wired or a wireless "connection."

Also, the present invention in its preferred, multi-point, dynamic video display or advertising system embodiment aspects is directed to the use of a multiple number of such vehicles geographically dispersed at various locations, each preferably with its own connection to a digital video server, for example, via in part possibly the "Internet," and more preferably using a satellite hook-up having two way communications capabilities, allowing for the concurrent, co-ordinated display of the same, dynamic digital video signal at the geographically spaced or dispersed locations. Such an approach allows, for example, the "live" (or recorded)

presentation of, for example, a political speech or announcement or a sporting event or political or business event or other event or advertising campaign of a geographically dispersed interest. In using the term “geographically dispersed” herein is directed to a system in which at least one of the multi-points is spaced from another at least a number of miles and more typically at least many miles, while some of the multi-points could be located closer to one another or even be adjacent to one another.

It is thus an object of one aspect of the invention to provide a relatively inexpensive video display vehicle preferably using a relatively short body, mobile, wheeled, enclosed, metal body vehicle with a box-like body preferably of a standard, readily available, “off-the-shelf” type.

It is a further object in the preferred embodiment of the present invention in another, independent aspect of the invention to use such a vehicle and provide a discrete video display on at least one side of its enclosed body and preferably physically separate video displays on each side, requiring only the cut-out of a limited section in each side wall of the enclosed body vehicle, with the cut-out designed to fit to or otherwise be compatible with the screen size of the video display to be used.

It is a further object of the present invention in another, independent aspect of the invention, to provide a multi-point dynamic video display or advertising system directed to the use of a multiple number of video display vehicles geographically

dispersed at various locations, each preferably with its own connection to, for example, possibly the “Internet” to a digital video server located at least miles (more typically many miles) or more away, more preferably using a two way satellite hook-up, allowing for the concurrent, co-ordinated display of the same digital video signal at the geographically spaced or dispersed locations. Such an approach allows, for example, the “live” (or recorded) presentation of, for example, a political speech or announcement or a sporting event or political or business event or other event or advertising campaign of a geographically dispersed interest.

In connection with the invention’s vehicle aspects individual, dynamic video displays are preferably located separately on at least the two sides and possibly also the rear of the enclosed vehicle body, which has locked door access into its interior, with the dynamic displays being viewable through wall cut-outs in the standard, “off-the-shelf” closed body, wheeled vehicles, preferably at least alternatively powered by long-lasting batteries, with the vehicles preferably having “Internet” access via a hard-wired, wireless or satellite connection. Each of the video displays, when at least in the form of a rear projection TV, preferably is separately mounted on a wheeled dolly, along preferably the computer and other electronic equipment, for easy loading and unloading of them with respect to the vehicle. Additionally, it is preferred that only a single video display is located on a side, with the screen taking up from about ten (10%) percent to about twenty-one (21%) percent or greater of each of the total

side wall areas, with there preferably being only one video display screen per side. A particularly preferred embodiment has a percentage of about fifteen to sixteen (15-16%) percent or greater, that is, at least about fifteen (15%) percent.

5 Although a multiple vehicle system is preferred, an individual vehicle in accordance with the present invention can also act alone, as part of, for example, a single vehicle display system, displaying, for example, advertising or information displays using a web site as a content source for the dynamic displays. An example of this would be a vehicle located at a computer trade show displaying selected content from a computer software or hardware company's web site. Additionally, although the use of the Internet as the content source or delivery system for the video content for display is preferred, alternatively, totally internally contained content could be used, utilizing, for example, an on-board computer sending video signals from the computer's hard drive or supplemental storage devices, a DVD, laser disk, or VHS tape, *etc.*, as the content source.

10 Some other, exemplary preferred features include:

15 The vehicle's electronics are preferably are powered by "marine" type batteries, producing at least about two hundred (200) amp hours, with the exemplary battery producing about two hundred and twenty-five (225) amp hours. They can sustain a charge of, for example, eight working hours. The batteries are charged off 20 of the alternator while the vehicle is running.

The use of such batteries allows the elimination of the need for generators that pollute the air with noise and gasoline.

The vehicles are environmentally friendly, eliminating the use of paper, glue and raw material used in many other forms of advertising.

5 The vehicles may be dropped off at any time day or night to run for, for example, eight hours without making any noise or the need of human attendance.

The vehicles have the ability to bring the “virtual reality world” into the “real world.”. They preferably are able to bring up web-pages or anything on the Internet that is suitable for public display.

Additional innovative, patentable features, advantages and objects of the present invention, including *inter alia* the vehicle adaption methodology, should also be clear from the following detailed description, taken in conjunction with the accompanying drawings, as well as the claims originally and subsequently presented.

Brief Description of Drawings

Thus, for a further understanding of the nature and objects of the present invention, reference should be had to the following detailed description, taken in conjunction with the accompanying drawings, wherein:

5 **Figure 1** is a generalized, simplified, schematic view of the over-all satellite broadcasting version of the preferred, exemplary embodiment of the multi-point advertising system of the present invention, along with a generalized alternative version exemplifying an internet, land-based, broadcasting approach.

10 **Figure 2** is a side view of a first, preferred, exemplary embodiment of the closed body, side video display vehicle in the form of a trailer used in the exemplary system of the present invention; while

15 **Figure 3** is an opposite side view of the video trailer embodiment of **Figure 2**, similar to **Figure 2** but of the opposite side of the vehicle; and

20 **Figure 4** is a rear end view of the video vehicle embodiment of **Figure 2**.

25 **Figure 5** is a generalized, schematic or simplified view of the interior components of the closed body, video trailer vehicle of **Figures 1-4**, showing *inter alia* the electronic and video components located within the closed body of the vehicle.

30 **Figure 6** is a side view of a second, alternative, exemplary embodiment of the closed body, side video display vehicle, in this case in the form of a motorized van

used in an alternative system of the present invention, with the opposite side view being generally a mirror image thereof; while

Figure 7 is a rear view of the video van embodiment of **Figure 6**.

Figure 8 is a side view of a third, alternative, exemplary embodiment of the closed body, side video display vehicle, in this case in the form of a truck used in a further alternative system of the present invention, with the opposite side view being generally a mirror image thereof; while

Figure 9 is a rear view of the video truck embodiment of **Figure 8**.

Figure 10 is a simplified view of an exemplary rear projection TV mounted on a wheeled dolly for easy movement of the TV on and off the vehicle.

Exemplary Modes for Carrying Out the Invention

- Drawing Reference Numbering -

For convenience in referencing the drawings, the reference numbering scheme used herein is presented below:

Figure 1

satellite broadcaster	1
internet	2
internet server for advertising images/info	3
internet telecommunication lines	4
uplink satellite antenna	5
side display video trucks	300

Figure 2-4

pullable trailer (1 st exemplary vehicle approach)	100
enclosed body	101
satellite antenna	103
promotional signage	109
side wall panel	110
lockable side, entry door	111
adjustable front support	112
side wheels	113
side panel cut-out	114
side video display screen	115
rear of trailer	116
top of trailer	117
side door lock	118
front of trailer	119
vehicle lights	120
air cooling venting elements	121 (Fig. 5)
audio speakers	122 (Fig. 5)
ventilation fan	123 (Fig. 5)

Figure 5

enclosed body	501
satellite antenna	503

5	alternate internet line connector	504
	vehicle side panels	510
	video rear projectors	515
	vehicle rear panel	516
	vehicle front panel	519
	computer	530
	computer monitor	531
	computer keyboard	532
	computer mouse	533
10	video processor	534
	UPS - power surge unit	535
	battery	550
	charger	551
	invertor	552
15	selector switch	553

Figure 6 & 7

20	motorized van (2 nd exemplary vehicle approach)	200
	enclosed body	201
	satellite antenna	203
	promotional signage	209
	side wall panel	210
	lockable side, entry door	211
	adjustable front support	212
	side wheels	213
	side panel cut-out	214
	side video display screen	215
	rear of van	216
	top of van	217
	side door lock	218
30	cab of van	219
	vehicle lights	220

Figure 8 & 9

35	truck (3 rd exemplary vehicle approach)	300
	enclosed body	301
	satellite antenna	303
	promotional signage	309
	side wall panel	310
	body side, lockable entry door	311

5	cab side door	311A
	adjustable front support	312
	side wheels	313
	side panel cut-out	314
10	side video display screen	315
	rear of trailer	316
	top of truck	317
	side door lock	318
	cab of truck	319
	vehicle lights	320
	Figure 10	
	rear projection TV	515
	wheeled dolly	515A

- Over All System (Satellite/Land-Based; Fig. 1) -

With reference to **Figure 1**, the currently preferred, exemplary embodiment of the overall dynamic video display or advertising system of the present invention includes a series of video display vehicles, *e.g.*, trucks **300**, each of which has a video display screen on at least one of its sides or end, preferably on at least both sides and possibly also the rear end, of the vehicle for displaying computer generated or driven, dynamic video signals. Sending the video signals to the trucks **300** is a satellite **1** in space, typically on a geo-synchronous or stationary orbit above the earth.

As is known, the satellite **1** typically receives an incoming, corresponding video signal from an uplink, land-based site **3** including or associated with, for example, an internet server containing, for example, advertising images or other video information. The server **3** has, for example, the video signal recorded on suitable

media for satellite broadcasting when desired via a satellite antenna **5**, in a manner well known in the satellite transmission art.

The ultimate source of the video signal alternatively could come via the “Internet” **2**, that is, the world-wide, global network, connected to the vehicles **300** via land-based telecommunication lines **4**. The vehicles **300** can be connected to the Internet via land-based telephonic communication links using modems (e.g., 56K modems or broadband connections) in the vehicles or using a wireless telecommunications link using, for example, cellular or digital technology.

This allows two way communications via the Internet **2** and, for example, interconnection wiring **4** between the vehicles **300** and the server **3**, or, alternatively, upload communications from the vehicles **300** via the telecommunications wiring **4** to the Internet **2** and the server **3** and download communications via the satellite **1** from the server uplink **3** to the vehicles **300**. Such service is currently readily and widely available from Hughes Network Systems via its “direcPC”™ service (see www.direcpc.com).

If the satellite **1** allows for two-way communication, and the video source **3** is being transmitted directly to the satellite via, for example, the uplink satellite antenna **5**, full, two-way, concurrent, co-ordinated communication between the truck(s) **300** and the ultimate video source **3** can be used. Such two way satellite communications, using a satellite communications dish antenna **103/203/303/503**

(**Figures 2,5, 6 & 8**) on the vehicles **300**, directly communicating with the satellite **1**, provides the currently most preferred approach of the present invention. Such technology is becoming available from, for example, StarBand Communications, Inc. (see www.starband.com), Sky Global Networks, Inc. and soon Hughes Network Systems, *etc.*

The video server **3** effectively can be located anywhere, in one part of the country, for example, in Seattle, WA, while the trucks **300** are spread elsewhere, for example, as generally illustrated in **Figure 1**, throughout the country, from the east coast to the west coast and from the Canadian border to the Mexican border and along the Gulf of Mexico, or, alternatively, on an international basis. Typically, the video server **3** will be at least a number of miles away and more typically at least hundreds or thousands of miles away from the various video display vehicles **300** communicating with the server or at least receiving the video signal from the server.

It is also noted that the video signals being sent from the server **3** are in digital (*vs.* analog) format, that is, the signals are made up of a sequence of “1s” and “0s” or “on/off” bits, and the video signals stay in digital format all the way through their reception by the video display vehicle(s) **300** (except if and where a modem is used in the “chain” of communications). This, of course, is different in kind from standard, NTSC, through-the-air, broadcast TV or radio signals.

When the satellite video signal reaches the trucks 300, the video signals are either stored on site in the vehicle on suitable storage media, *e.g.*, a hard disk drive or supplemental storage devices, for later display or, alternatively and more preferably, for being concurrently displayed on the video displays 115/215/315/515 (Figures 2,5, 6 & 8) of each of the vehicles or in selected ones of the vehicles 300, as may be desired.

It thus should be understood that the preferred embodiment of the system of the present inventions allows for concurrent, simultaneous broadcasting of live or dynamic video, that is, images or graphics, still (but changeable) or moving, to multiple, spaced locations as part of a co-ordinated advertising or other type of campaign, whether commercial or political or *pro bono publico* or otherwise. Thus, for example, a political speech could be simul-cast to a number of vehicles 300 for viewing by observers at many different locations across a desired area, *e.g.*, internationally, the country, a state, regionally, a city or a community, *etc.*, while the observers are away from traditional video displays, such as, for example, their home TVs, for example, while the observers are at playgrounds, shopping malls, sports locations, *etc.* This is particularly valuable where the video display vehicle(s) location(s) is/are in high intensity traffic area(s).

The displaying and viewing can be done on a local, regional, national or even international, co-ordinated basis, depending on the number and locations of the video

display vehicles **300**. Thus, the preferred embodiment can greatly enhance the viewability, that is, the potential audience of any video signal, as well as the flexibility of the signals to be displayed.

5 Thus, for example, the viewing public is given the opportunity to go to various types of gatherings while still being able to avail themselves of video viewing.

The same principles could be applied to commercial advertising campaigns where, for example, the advertiser wishes to, for example, make a concurrent announcement of some commercial event or sale of some value and interest, as well as for displaying general commercial advertising images.

10 It is contemplated that the video display vehicles **300** can be either sold outright to the end purveyor of the video images or to advertising businesses, *etc.*, or leased or set up on a franchise basis. Thus, for example, an advertiser could engage on a rental basis, for example, a few, say, for example, five, or, for a larger campaign, one hundred and fifty (150) or even thousands of video display vehicles **300** and have them placed throughout a selected city or cities in, for example, a single state or multiple states, *etc.*, for a coordinated, controlled campaign in the selected area(s). By their very nature, the vehicles **300** can be readily driven and located where desired and then quickly and easily deployed to new location(s) and so on, magnifying their advertising effectiveness and worth.

The foregoing examples are, of course, subject to great variation.

- Trailer Vehicle (Figs. 2-4) -

With reference to **Figures 2-4**, an exemplary video display vehicle **100** of a pullable trailer type is illustrated. As can be seen, the vehicle **100** includes an enclosed trailer body **101**, having on its top **117** a preferably two-way, satellite antenna **103** for communicating with the satellite **1** and receiving video signals from the ultimate video source **3** via the satellite **1**. The body **101** has two side panels **110**, at least one of which has a lockable, side entry door **111** located adjacent to the video display screen **115** (note **Figure 2**) for entry into the body and access to its contents detailed, for example, in connection with **Figure 5** below. A side door lock **118** is included for security purposes.

The side that does not have the door **111** provides a relatively large, "free" area adjacent to the video display screen **115** (particularly to the left, as viewed in **Figure 3**) preferably used for signage **109** promoting, for example, the use of the vehicle for video display of prospective customers' video messages. Thus, the sign might read, for example, "CALL 555-5555 to RENT THIS VEHICLE!"

As typical of trailers an adjustable front support **112** is provided on the front **119** of the trailer **100**, which has sets of side wheels **113**. On at least one side and preferably both sides there is provided a side panel cut-out **114** through which a side video display screen **115** is seen, preferably with a single video display screen per side.

The rear **116** of the trailer **100** likewise includes a panel cut-out **114** through which an end video display screen **115** is viewed, resulting in viewable display screens on three sides of the vehicle. The front of trailer **119** also can include a panel cut-out (**114**) through which a front video display screen **115** can be seen or viewed, 5 if so desired, for maximum viewable displays, although typically for the preferred types of vehicle the front display screen will be smaller than the side or rear displays. This would be particularly advantageous if the trailer **100** is brought to a location for viewing and parked at that location for a desired period of time, ranging from a few hours to a number of days, *etc.* If so desired, the front area of the body **101** could be enlarged to accommodate a larger video screen.

With a standard vehicle **100 (200/300)** being used and having at least their side and possibly rear and front panel(s) cut out, it is desirable to include wall stiffening structures to beef up the wall panels using, for example, appropriately cut, plywood sections or supplemental support beams. The cut-outs (**114**) are sized to equal the size of the video display screen **115** to be used, for example, rectangular cut-outs each having, for example, a sixty or sixty-five inch (60" or 65" measured on the diagonal) cut-out measured diagonally in, for example, the current analog TV NTSC screen U.S. standard four-to-three (4:3) ratio. A video display screen (**115**) is then positioned in or behind each cut-out for display and viewing purposes. Of course,

other screen ratios are possible, including, for further example, the U.S. standard SDTV and HDTV screen size having a ratio of sixteen-to-nine (16:9).

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When a dolly (515A, note **Figure 10**) mounted, rear projection TV 515 set is used for the video display 115, it is rolled into place and appropriately positioned with its screen co-existent with its respective cut-out 114 and fastened into position, with the vehicle 100 (200/300) brought to its desired location or driven along its desired route for viewing by people at that location or along that route. When the viewing is complete, the vehicle 100 (200/300) is then moved to a different location or along a different route for the display or viewing of the same or a different video signal. When the use of the vehicle 100 (200/300) is complete, it can be returned to its central storage location, and, if so desired, the dolly-mounted, rear projection TVs 515 are unfastened, and rolled off of the vehicle for, for example, off-vehicle storage or maintenance.

To provide sound or audio accompanying the video display, audio speakers 122 are provided on the trailer 100 in connection with each video display screens 115. As shown in **Figure 5**, three speakers 122 are provided, including a center channel and two, flanking, left/right speakers, which can be used to provide spatial audio imaging. Two or more additional speakers (122) could be provided for satellite" speakers to provide, for example, "Dolby Digital"™ 5.1 or "DTS"™ sound, *etc.*

As can be seen in **Figure 4**, the vehicle **100** includes standard, vehicle tail lights **120**. Air cooling venting elements **121** (note **Figure 5**) are included in the top **117**, as well as possibly elsewhere, as needed or desired for venting the heat produced *inter alia* by the substantial amount of electronic equipment contained within the trailer body **101**.

The satellite antenna **103** could be either static or dynamic in its directionality, which in the latter case is achieved by a antenna drive which stays pointed at the satellite **1** as the vehicle **100** is moved about on its wheels **113**. Some exemplary antenna equipment that could be used include the “Gemini Earth Station,” the “DirecWay”™ multimedia VSAT or Enterprise Edition from Hughes Network Systems, “TracVision”® LM from KVH which has dynamic satellite tracking for a vehicle and the KVH “TracVision”® G\$ which privides an in-motion, marine satellite TV antenna system, personal earth station (PEM™) 5000 Plus, *etc.*

- *Exemplary Electronic Equipment (Fig. 5) -*

As can be seen in **Figure 5**, the exemplary electronic equipment contained in the vehicle body **501** (**101/201/301**) includes a satellite antenna **503** (**103/203/303**), preferably having two way communications capabilities or at least down load or down link capability for receiving video data from the satellite **1** which then is stored or otherwise processed in the computer **530**. As an alternative telecommunication link for at least up-linking to the Internet **2**, an alternate, internet line connector **504** from

the computer modem (not illustrated but well known) is included for hard wire connection to the Internet in coordination with the downlink from the satellite **1**. If satellite communication is not available, the line connector **504** can be used for two way communication, if so desired, using, for example, a 56K modem or, for greater 5 broadband capacity, a cable modem, xDSL or T₁ line, if available.

Additionally or alternatively, wireless telecommunications, using for example a cellular or digital phone, can be used for either a co-ordinated uplink to the Internet **2** or for two way telecommunications with the Internet using currently available technology. Although current telecommunications speeds, particularly for wireless telecommunications, is relatively slow for downloading video, effective data streaming rates are increasing as time goes by.

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In comparison to a hard wired link, wireless allows for mobile telecommunications during the vehicle's movement and is currently preferred for vehicles which are intended to .to display for public viewing while in transit, although, as previously stated, two way satellite communications is the most preferred for mobile display. Of course, if the video information is effectively pre-loaded on the computer **530** using its hard drive(s) or using video compact disks (CDs), digital versatile disks (DVDs), laser disks, VHS video tapes and the like, the vehicle can display video images on the side and rear video display screens **515** when in transit using the video data already available from the computer **530** or an equivalent video

playback system (video receiver, video CD player, DVD player, laser disk player and/or VHS tape player, *etc.*).

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In analogous fashion to vehicle **100**, vehicle side and rear panels **510/516**, respectively, allow the three, internal, video rear projectors **515** or other appropriate video displays to be seen by the public located in the area surrounding the vehicle.

The computer **530** preferably includes a computer monitor **531**, computer keyboard **532**, a computer mouse **533**, and an associated video processor **534**. A UPS - power surge unit **535** is provided to protect the associated electronic equipment, including the computer system **530-534**.

Each big screen, rear projector TV **515** and the computer system **530-534** preferably includes a battery **550** (*e.g.*, a standard, readily available, 12 volt DC battery of the marine type, such as, for example, a “GEL TECH” Model No. 8G8D group 8D 12 volt gel battery), a charger **551**, an invertor **552** and a selector switch **553**. An alternative, more preferred battery **550** is a BCI “LIFELINE GD”type battery (8d 255-8d-12), which produces when new about two hundred and fifty-five (255) amp hours of DC electrical power.

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Either of these exemplary batteries for the battery **550**, producing two hundred and twenty-five (225) or two hundred and fifty-five (255) amp hours, respectively, provides suitable power to the video display units and the associated micro-computer system **530-534** for an extended period of time (*e.g.*, about six hours or eight hours

or more) for displaying video displays while the vehicle is in transit or otherwise in motion or at a location where no AC power is available. A battery producing when new a minimum of about two hundred (200) amp hours is considered necessary for appropriate battery power for the complete electronics of **Figure 5**. When parked, the vehicle preferably is connected up to an AC power line, which charges up the batteries **550** via the chargers **551** and which can be used to power the equipment when used for stationary display for effectively an unlimited time.

An exemplary, big screen, rear projector TV **515** is a Zenith sixty (60") inch projection TV (model #Z60Z83). Each rear projector TV **515** (as well as preferably the computer system) preferably is mounted on a wheeled platform or dolly (note **Figure 10**) to allow them to be quickly and easily rolled on and off the vehicle body **501 (101/201/301)**. Because each such TV includes a lot of tuner related receiver circuitry which is unnecessary to the invention, a monitor type, video display could be used to achieve the purposes of the present invention.

For example, gas plasma monitors could be used, such as, for example, those from Fujitsu, NEC (e.g., its model NP50C1MF01), Pioneer (e.g., its model PDP-505HD), Sony, etc., which can provide HDTV video displays in a very compact, relatively flat package. As a further alternative, liquid crystal display (LCDs) monitor panels could be used. However, due to price considerations and reduced pricing of 4:6 screen ratio TVs, full, rear projection TVs currently are more cost effective.

However, with time, for example, the technically preferred gas plasma screens are expected to be more cost effective.

When the video display is in the form of a flat panel, the flat panel display can be mounted, if so desired, on the exterior of the side walls **110**, obviating the need for cutting out a section of the side wall panel for the cut out **114**, as described above. This is considered an equivalent approach.

A ventilation fan **123** preferably is included in connection with vents **121** to vent the vehicle interior and reduce the interior temperature in the vehicle. If so desired, alternatively, the interior of the vehicle could be air conditioned.

- Vehicle Variants (Figs. 6 & 7 and 8 & 9) -

It is noted that alternative, video display vehicle designs or types, namely, van **200** & truck **300** with enclosed bodies **201** & **301**, are illustrated in **Figures 6 & 7** and **8 & 9**, respectively. Because of the analogousness of these vehicles with the video display vehicle **100** described in detail above and the identification of the reference numbers of these figures above, further description would be considered superfluous and redundant. In the interest of brevity, general reference is made to the foregoing descriptions.

It is noted that all three, exemplary vehicle types, that is, the pullable, closed body trailer **100**, the van **200** and the closed body truck **300** are relatively inexpensive

and easily adaptable to be used in the system of the present invention and are relatively short bodied, for example, less than about twelve (12') feet in body length. By merely cutting rectangular holes in the side (**110/210/310/510**) and/or rear (**116/216/316/516**) and/or front (**119/219/319/519**) panels and adding any structural beefing up necessary to compensate for the loss in structural strength due to the panel cut-outs, and adding the appropriate electronic equipment (**Figure 5**), the video display vehicles of the invention are easily and economical made.

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In fact, the total cost of a prototype of a vehicle comparable to the closed body truck **300** of **Figures 8 & 9** with the electronic equipment illustrated in **Figure 5**, including the three video displays **315**, only about thirty-five thousand (\$35,000.00) dollars. As the vehicles are produced on a volume basis, economies of scale and reductions in rear projection TVs and other video displays will allow an even less cost. Also, it is noted that the non-motorized, trailer vehicle **100** of **Figures 2-4** would be substantially less.

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It is further noted that preferably no significant, if any, gaps between the video display screens **115/215/315/515** and the remaining vehicle walls **110/210/310/510 & 116/216/316/516**, provide reasonable security, even allowing a vehicle operator to position the vehicle, start-up the equipment to display the desired video signals, and even leave the vehicle for, for example, a lunch break or the like, with the standard vehicle doors **111/211/311** locked, thereby still maintaining reasonable security from

theft. Also, with operation allowed with all doors closed, adverse weather conditions that might damage the electronic equipment illustrated in **Figure 5** is avoided.

Exemplary vehicles for the three types of vehicles **100**, **200** & **300**, respectively, are:

- 5 1. a pullable trailer **100** – for example, a “PACE” cargo trailer with an enclosed body size of about twelve foot (length) by six foot (width) by six and a half foot (height), namely, about 12'x6'x6.5';
2. a van **200** – for example, a “GMC” step van or a “UTILIMASTER” walk-in or step van having an enclosed body size of about twelve foot (length) by six and a half foot (width) by a little over six foot (height) or greater, namely, about 12'x6.5'x6'+; and
3. a closed body truck **300** – for example, a “GMC Savana” cutaway truck or van or other enclosed body on, for example, a “GMC P-Chassis” (or for heavier load carrying capacity a “T-Series” or “W-Series”chassis) or a “Ford E-Series” chassis, having an enclosed body size of, for example, about twelve foot (length) by about seven foot (width) by about six and a half foot (height); namely, about 12'x7'x6.5'; with a greater height body being desirable if a front video display is desired.

Thus, in each instance, the size of the vehicle body **101/201/301** is typically and 20 preferably relatively small, that is, less than about twelve (length) by about six foot

(width) by about six and a half foot (height) or greater for front video display, that is about 12'x6'x6.5'+. Considering the size of a side panel, that is, about twelve foot by about six and a half foot (12'x6.5' for a total of about 78 square feet), a single, sixty (60" on the diagonal, 4:3 ratio, total 12 square feet) inch video projection TV screen takes up about a little over fifteen (15+%) percent of the total side surface area of the main enclosed body.

Exemplary, approximate screen sizes and their approximate relative area percentages, using exemplary rear projection Mitsubishi rear projection TVs as examples, are outlined below.

Model #	Screen Size	Ratio	Screen Area	% of Side	
VS-50707	50" dia.	4:3	3.33'x2.5' (8.3#')	10.7%	
VS-55707	55" dia.	4:3	3.67'x2.75' (10.1#')	12.9%	
VS-60707	60" dia.	4:3	4'x3' (12#')	15.4%	
VS-70707	70" dia.	4:3	4.67'x3.5' (16.35#')	21%	
15	WS-55907	55" dia.	16:9	4'x2.25' (9#')	11.5%

Model #	Screen Size	Ratio	Screen Area	% of Side
WS-65907	65" dia.	16:9	4.71'x2.65' (12.5#')	16%
WS-73907	73" dia.	16:9	5.33'x3' (16#')	20.5%

where "% of Side" refers to the percentage of the video display screen area in square feet to the total square footage area of the typical side wall **111/211/311** of the main vehicle body **101/201/301**, which side panel measures, for example, 12'x6.5' for a square footage area of seventy-eight (78#') square feet.

Thus, the preferred percentage range of the screen area of the side video display **115/215/315** relative to the side wall panel **111/211/311** is from about ten (10%) percent to about twenty-one (21%) percent or greater, with there preferably being only one video display screen per side. A particularly preferred embodiment is a percentage of about fifteen to sixteen (15-16%) percent or greater, that is, at least about fifteen (15%) percent.

It should be understood that the foregoing variations and alternatives, *etc.*, are merely exemplary and many other changes are possible within the teachings of the present invention.

It is noted that the embodiments of the present invention described herein in detail for exemplary purposes are of course subject to many different variations in structure, design, application and methodology. Because many varying and different embodiments may be made within the scope of the inventive concept(s) herein taught, and because many modifications may be made in the embodiments herein detailed in accordance with the descriptive requirements of the law, it is to be understood that the details herein generally are to be interpreted as illustrative and not in a limiting sense.